



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

09/867,383

05/31/2001

Yuka Kouyama

001425-105

7012

7590

07/20/2004

William C. Rowland
BURNS, DOANE, SWECKER & MATHIS, L.L.P.
P.O. Box 1404
Alexandria, VA 22313-1404

EXAMINER

CANTELMO, GREGG

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1745

DATE MAILED: 07/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/867,383

Applicant(s)

KOUYAMA ET AL.

Examiner

Gregg Cantelmo

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-30 is/are allowed.
- 6) ☒ Claim(s) 31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 17.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the amendment received January 26, 2004:
 - a. Claims 14-31 are pending;
 - b. The drawing objection are withdrawn in light of the deletion of the term "conventional" from the written description;
 - c. The prior art rejections to claims 14-30 are withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsura in view of either the admitted prior art of the instant application or U.S. patent No. 4,401,546 (Nakamura).

Katsura discloses a high frequency (HF) sputtering device comprising: a processing chamber SR, a HF power supply (RF power attached to backing plate 13), a backing plate 13 (cathode) inside the processing chamber inherently electrically insulated from the processing chamber (thus ensuring that the attraction bias to sputter the cathode is only applied to the target and not the remainder of the processing

Art Unit: 1745

chamber) the cathode 13 connected to the HF power and extending only along a given axial extent of the processing chamber, a target 14 mounted on the first side of cathode 13, a metal plate mounted in the processing chamber adjacent to the cathode 13 but only in a location outside of the axial extent of the cathode 13, the metal plate 16 having a central opening wherein an outer circumferential edge of the metal plate 16 is electrically grounded (in electrical ground connection with chamber wall 11, the metal plate is arranged so as to form a gap having a first portion between the metal plate 16 and cathode 13 and a second portion between the metal plate 16 and target and wherein the gap includes a bend between the first portion and second portion so that the gap is substantially L-shaped. The processing chamber, cathode and shield are arranged such that a dielectric space is between the cathode 13/14 and the remaining grounded components of the apparatus (Fig. 1 as applied to claim 31).

The relative arrangement of the gap with respect to the target and cathode is a suggestion of a small dielectric spacing between them.

The difference between claim 31 and Katsura is that Katsura does not teach or the gap being sufficiently narrow and long enough to prevent plasma from passing through the gap.

The admitted prior art teaches that gap spacing of 2 mm is known for the purposes of preventing plasma from entering the gap (page 1, paragraph [0003]).

Nakamura teaches the same concept (col. 3, ll. 36-47). This prevents sputtering of the cathode.

The motivation for providing gap spacing of 3mm or less is that it prevents plasma from entering the gap between the shield and target/cathode.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Katsura by using a sufficient gap space such as a gap width of less than 3mm since it would have prevented plasma from entering the gap between the shield and target/cathode.

Response to Arguments

3. Applicant's arguments with respect to claim 31 have been considered but are moot in view of the new ground(s) of rejection.

Applicant arguments are not persuasive for the following reasons.

First, Applicant states: "Based on the illustrations in the Katsura reference, it is clear that a capacitance may be developed ...".

This statement is held only to be applicant's opinion because it fails to provide any clear and convincing evidence to support this speculation. For example, a person with legs may be able to jump 2 feet high but absent any evidence is not held to be fact.

Thus this statement regarding the Katsura reference cannot be convincing on its own merits without clear and convincing evidence to support Applicant's position.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., only having a dielectric material between the cathode and side wall of the processing chamber) are not recited in the rejected claim(s). Although the claims are

Art Unit: 1745

interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The teaching of sufficiently small gaps to prevent plasma passing between the shield and cathode is taught by the secondary references above and render such a limitation obvious.

Allowable Subject Matter

4. Claims 14-30 are allowed.

The following is an examiner's statement of reasons for allowance: none of the prior art of record are considered to teach, suggest or render obvious the invention of claim 14 wherein the apparatus defined therein is configured so that the processing chamber, cathode and the grounded metal shield are arranged such that only a dielectric material is between the cathode and the wall of the processing chamber within the axial extent of the cathode.

Katsura does not teach or suggest the configuration of the dielectric material as defined above.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Art Unit: 1745

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (571) 272-1283. The examiner can normally be reached on Monday to Thursday from 9 a.m. to 6 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. FAXES received after 4 p.m. will not be processed until the following business day. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregg Cantelmo
Primary Examiner
Art Unit 1745

gc

A handwritten signature in black ink, appearing to read "Gregg Cantelmo", with a stylized flourish at the end.

July 17, 2004